National Institute of Environmental Health Sciences

Emerging viral threats to the Australian blood supply

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Abstract:

OBJECTIVES: To assess the risk to the Australian blood supply posed by emerging or re-emerging viral infections. METHOD: A review was undertaken of the English-speaking literature on the potential for emerging viral threats to human health in Australia, the future implications of virus ecology, climate change and population movement and the implications for blood transfusion. RESULTS: Published data confirm that Australia's blood supply is among the safest in the world for currently screened viral pathogens as a result of rigorous surveillance, donor selection and state-of-the-art processing and laboratory testing. However, Australia has a number of other viral pathogens with the potential to threaten the safety of the blood supply such as the Ross River, Barmah Forrest, Kunjin, Japanese Encephalitis, Murray Valley Encephalitis and dengue viruses. Of these, dengue is currently of most concern to blood safety because; it can cause fatalities, there are regular seasonal outbreaks in Northern Australia and, in contrast to other viruses mentioned above an overseas case of transfusion transmission has already been documented. Notably, despite the lack of a suitable dengue screening test the ARCBS already implements supplementary measures to protect the blood supply during outbreaks. CONCLUSION: Current interventions have proven extremely effective in minimising transfusion transmission in Australia of recognised viral pathogens. The threat posed by emerging viral pathogens to the safety of blood transfusion emphasises the need for global collaboration and consideration of further intervention strategies on a country by country basis including options such as nucleic acid testing and pathogen reduction technologies.

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Resource Description

Early Warning System: ☑

resource focus on systems used to warn populations of high temperatures, extreme weather, or other elements of climate change to prevent harm to health

A focus of content

Exposure : ☑

weather or climate related pathway by which climate change affects health

Precipitation, Temperature

Temperature: Fluctuations

Geographic Feature: ☑

resource focuses on specific type of geography

None or Unspecified

Geographic Location:

resource focuses on specific location

Non-United States

Non-United States: Australasia

Health Co-Benefit/Co–Harm (Adaption/Mitigation):

specification of beneficial or harmful impacts to health resulting from efforts to reduce or cope with greenhouse gases

A focus of content

Health Impact:

specification of health effect or disease related to climate change exposure

Infectious Disease

Infectious Disease: Vectorborne Disease

Vectorborne Disease: General Vectorborne

Intervention:

strategy to prepare for or reduce the impact of climate change on health

A focus of content

Medical Community Engagement:

resource focus on how the medical community discusses or acts to address health impacts of climate change

A focus of content

Mitigation/Adaptation:

mitigation or adaptation strategy is a focus of resource

Adaptation

Resource Type:

format or standard characteristic of resource

Review

Resilience:

capacity of an individual, community, or institution to dynamically and effectively respond or adapt to shifting climate impact circumstances while continuing to function

A focus of content

Timescale: ☒

time period studied

Time Scale Unspecified

Vulnerability/Impact Assessment: ☒

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content